SEQUENCE LISTING

<110> KUMAGAI, Izumi et al.

<120> NOVEL DIABODY-TYPE BISPECIFIC ANTIBODY

<130> 4600-0106P

<140> US 10/642,284
<141> 2003-08-18

<150> JP 2003-038643
<151> 2003-02-17

<160> 40

<170> PatentIn version 3.1

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nnncggccga ggagactgtg agagtggt 28

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nnncggccga gctcacggta accagcgta 29

<210> 7
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<223> n is a, c, g, or t

<400> 7
nnngatatcc agatgaccca gag 23

<210> 8
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nnnccgcggc gcgggtaatc tgc 23

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nnnccatggc ccaggtgcaa ctggtg 26

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<210> 12
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<400> 13
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<400> 15
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<400> 16
gccactgcgc gtgcagtaat a 21

<210> 17
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<210> 18
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<400> 18
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<210> 19
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<223> S h5H-Y27D(+)

<400> 19
gcctcaggcg ataccttac g 21

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<212> DNA
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<220>
<223> T h5H-Y27D(-)

<400> 20
cgtaaaggta tcgcctgagg c 21

<210> 21
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<212> DNA
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<220>
<223> U h5H-M69LT73R(+)

<400> 21
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<210> 22
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<220>
<223> V h5H-M69LT73R(-)

<400> 22
tcgaaatgct gcgatcaacc gtcagggtca ctttg 35

<210> 23
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<220>
<223> W h5H-I75SS76RA78V(+)

<400> 23
gataccagca gtcgcacggt ctatatggaa 30

<210> 24
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> X h5H-I75SS76RA78V(-)

<400> 24
ttccatatag accgtgcgac tgctggtatc 30

<210> 25
<211> 354
<212> DNA
<213> Mouse

<220>
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<222> (1)..(354)
<223> 5H

<400> 25

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Gln Val Gln Leu Gln Gln Ser Gly Ser Glu Met Ala Arg Pro Gly Ala
1               5                  10                  15

tca gtg aag ctg ccc tgc aag gct tct ggc gac aca ttc acc agt tac   96
Ser Val Lys Leu Pro Cys Lys Ala Ser Gly Asp Thr Phe Thr Ser Tyr
            20                  25                  30

tgg atg cac tgg gtg aag cag agg cat gga cat ggc cct gag tgg atc  144
Trp Met His Trp Val Lys Gln Arg His Gly His Gly Pro Glu Trp Ile
        35                  40                  45

gga aat att tat cca ggt agt ggt ggt act aac tac gct gag aag ttc  192
Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
    50                  55                  60

aag aac aag gtc act ctg act gta gac agg tcc tcc cgc aca gtc tac  240
Lys Asn Lys Val Thr Leu Thr Val Asp Arg Ser Ser Arg Thr Val Tyr
65                  70                  75                  80

atg cac ctc agc agg ctg aca tct gag gac tct gcg gtc tat tat tgt  288
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```
Met His Leu Ser Arg Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

aca aga tcg ggg ggt ccc tac ttc ttt gac tac tgg ggc caa ggc acc      336
Thr Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
            100                 105                 110

act ctc aca gtc tcc tcc                                          354
Thr Leu Thr Val Ser Ser
        115
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<210> 26
<211> 342
<212> DNA
<213> Mouse

<220>
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<222> (1)..(342)
<223> 5L

<400> 26

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gac att cta atg acc caa tct cca ctc tcc ctg cct gtc agt ctt gga       48
Asp Ile Leu Met Thr Gln Ser Pro Leu Ser Leu Pro Val Ser Leu Gly
1               5                   10                  15

gat caa gcc tcc atc tct tgc aga tct agt cag aac att gta cat aat       96
Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Asn Ile Val His Asn
            20                  25                  30

aat gga atc acc tat tta gaa tgg tac ctg caa agg cca ggc cag tct      144
Asn Gly Ile Thr Tyr Leu Glu Trp Tyr Leu Gln Arg Pro Gly Gln Ser
        35                  40                  45

cca aag ctc ctg atc tac aaa gtt tcc gac cga ttt tct ggg gtc cca      192
Pro Lys Leu Leu Ile Tyr Lys Val Ser Asp Arg Phe Ser Gly Val Pro
    50                  55                  60

gac agg ttc agt ggc agt gga tca ggg aca gat ttc aca ctc aag atc      240
Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65                  70                  75                  80

agc aga gta gag gct gag gat ctg gga att tat tac tgc ttt caa ggt      288
Ser Arg Val Glu Ala Glu Asp Leu Gly Ile Tyr Tyr Cys Phe Gln Gly
                85                  90                  95

tca cat att cct ccc acg ttc gga ggg ggg acc aag ctg gaa atc aaa      336
Ser His Ile Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
            100                 105                 110

cgt gcg                                                          342
Arg Ala
```

<210> 27

<211> 357
<212> DNA
<213> Artificial Sequence

<220>
<221> CDS
<222> (1)..(357)
<223> Chimeric Sequence (hOH)

<400> 27
cag gtg caa ctg gtg cag agc ggc ggt ggc gtt gtg cag ccg ggc cgc 48
Gln Val Gln Leu Val Gln Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1 5 10 15

agc ctg cgc ctg tct tgc aaa gcg agc ggc tat acc ttt acg cgc tat 96
Ser Leu Arg Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Arg Tyr
20 25 30

acc atg cat tgg gtg cgc cag gcg ccg ggc aaa ggt ctg gaa tgg att 144
Thr Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45

ggc tat att aac ccg tct cgc ggc tat acc aac tat aat cag aaa gtg 192
Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Asn Gln Lys Val
50 55 60

aaa gat cgc ttt acc att agc cgc gat aac tct aaa aac acc gcg ttt 240
Lys Asp Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Ala Phe
65 70 75 80

ctg cag atg gat agc ctg cgc ccg gaa gat acc ggc gtg tat ttt tgc 288
Leu Gln Met Asp Ser Leu Arg Pro Glu Asp Thr Gly Val Tyr Phe Cys
85 90 95

gcg cgc tac tat gat gac cat tat agc ctg gat tat tgg ggc cag ggc 336
Ala Arg Tyr Tyr Asp Asp His Tyr Ser Leu Asp Tyr Trp Gly Gln Gly
100 105 110

acc ccg gtg acc gtt agc tcg 357
Thr Pro Val Thr Val Ser Ser
115

<210> 28
<211> 324
<212> DNA
<213> Artificial Sequence

<220>
<221> CDS
<222> (1)..(324)
<223> Chimeric Sequence (hOL)

<400> 28
gat atc cag atg acc cag agc ccg agc tct ctg agc gcg agc gtg ggc 48
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

```
gat cgc gtg acc att acg tgc agc gcg tct agc tct gtg agc tat atg       96
Asp Arg Val Thr Ile Thr Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
            20                  25                  30

aac tgg tac cag caa acc cca ggc aaa gcg ccg aaa cgc tgg att tat      144
Asn Trp Tyr Gln Gln Thr Pro Gly Lys Ala Pro Lys Arg Trp Ile Tyr
        35                  40                  45

gat acc agc aaa ctg gcg agc ggc gtg ccg agc cgc ttt agc ggc tct      192
Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ser Arg Phe Ser Gly Ser
    50                  55                  60

ggt agc ggc acc gat tat acg ttt acc att agc tct ctg cag ccg gaa      240
Gly Ser Gly Thr Asp Tyr Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu
65                  70                  75                  80

gat att gcg acc tat tac tgc cag caa tgg agc tct aac ccg ttt acc      288
Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro Phe Thr
                85                  90                  95

ttt ggc cag ggt acc aaa ctg cag att acc cgc gcg                      324
Phe Gly Gln Gly Thr Lys Leu Gln Ile Thr Arg Ala
            100                 105
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<210> 29
<211> 354
<212> DNA
<213> Artificial Sequence

<220>
<221> CDS
<222> (1)..(354)
<223> Chimeric Sequence (h5H)

<400> 29

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cag gtg caa ctg gtt cag agc ggc gcg gaa gtg aaa aag ccg ggc gcg       48
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                   10                  15

tcg gtt aaa gtg agc tgc aaa gcc tca ggc tat acc ttt acg agc tac       96
Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
            20                  25                  30

tgg atg cat tgg gtg cgc cag gcc ccg ggt cag ggc ctg gaa tgg atg      144
Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45

ggt aac att tat ccg ggc agc ggt ggc acc aac tat gcg gaa aaa ttt      192
Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
    50                  55                  60

aag aac cgc gtg acc atg acg cgt gat acc agc att tcg acg gcc tat      240
Lys Asn Arg Val Thr Met Thr Arg Asp Thr Ser Ile Ser Thr Ala Tyr
65                  70                  75                  80
```

```
atg gaa ctg agc cgc ctg cgt agc gat gac acc gcc gtg tat tac tgc      288
Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

gcg cgc agt ggc ggt ccg tat ttt ttc gat tac tgg ggc cag ggt acg      336
Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
            100                 105                 110

ctg gtt acc gtg agc tcg                                             354
Leu Val Thr Val Ser Ser
        115
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<210> 30
<211> 342
<212> DNA
<213> Artificial Sequence

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<221> CDS
<222> (1)..(342)
<223> Chimeric Sequence (h5L)

<400> 30

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gat att gtg atg acc cag agc ccg ctg agc ctg ccg gtg acc cca ggc       48
Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly
1               5                   10                  15

gaa ccg gcg tcg att agc tgc cgc agc tcg cag aac atc gtg cat aat       96
Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Asn Ile Val His Asn
            20                  25                  30

aac ggc att acc tat ctg gaa tgg tat ctg cag aaa ccg ggc caa agc      144
Asn Gly Ile Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser
        35                  40                  45

ccg cag ctg tta att tat aaa gtg agc gat cgc ttt agc ggc gtg ccg      192
Pro Gln Leu Leu Ile Tyr Lys Val Ser Asp Arg Phe Ser Gly Val Pro
    50                  55                  60

gat cgc ttt tcg ggc agc ggt agt ggc acc gat ttt acg ctg aaa att      240
Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65                  70                  75                  80

agc cgc gtg gaa gcg gag gat gtt ggc gtg tat tac tgc ttt cag ggc      288
Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Phe Gln Gly
                85                  90                  95

agc cat atc ccg cca acc ttt ggc caa ggc acc aaa gtg gaa att aaa      336
Ser His Ile Pro Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105                 110

cgc gcg                                                             342
Arg Ala
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<210> 31
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric Sequence (h5H-m01)

<400> 31

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
50 55 60

Lys Asn Arg Val Thr Met Thr Arg Asp Thr Ser Ile Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 32
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric Sequence (h5H-m02)

<400> 32

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr

20 25 30

Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
50 55 60

Lys Asn Arg Val Thr Met Thr Arg Asp Thr Ser Ile Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Thr
85 90 95

Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 33
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric Sequence (h5H-m03)

<400> 33

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
50 55 60

Lys Asn Lys Val Thr Met Thr Val Asp Thr Ser Ile Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 34
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
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<400> 34

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
50 55 60

Lys Asn Lys Val Thr Met Thr Val Asp Thr Ser Ile Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 35
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<212> PRT

<213> Artificial Sequence

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<400> 35

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Asp Thr Phe Thr Ser Tyr
20 25 30

Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
50 55 60

Lys Asn Lys Val Thr Met Thr Val Asp Thr Ser Ile Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 36
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric Sequence (h5H-m06)

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Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
50 55 60

Lys Asn Lys Val Thr Met Thr Val Asp Thr Ser Ile Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Thr
85 90 95

Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 37
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric Sequence (h5H-m07)

<400> 37

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
50 55 60

Lys Asn Lys Val Thr Leu Thr Val Asp Arg Ser Ile Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 38
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric Sequence (h5H-m08)

<400> 38

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1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
50 55 60

Lys Asn Lys Val Thr Leu Thr Val Asp Arg Ser Ile Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 39
<211> 118
<212> PRT
<213> Artificial Sequence

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<223> Chimeric Sequence (h5H-m09)

<400> 39

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Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                  10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
            20                  25                  30

Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
    50                  55                  60

Lys Asn Lys Val Thr Leu Thr Val Asp Arg Ser Ile Ser Thr Ala Tyr
65                  70                  75                  80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Thr
                85                  90                  95

Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
            100                 105                 110

Leu Val Thr Val Ser Ser
        115
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<223> Chimeric Sequence (h5H-m10)

<400> 40

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Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                  10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
            20                  25                  30

Trp Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45
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Gly Asn Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Ala Glu Lys Phe
    50                  55                  60

Lys Asn Lys Val Thr Met Thr Val Asp Thr Ser Ser Arg Thr Val Tyr
65                  70                  75                  80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Thr
                85                  90                  95

Ala Arg Ser Gly Gly Pro Tyr Phe Phe Asp Tyr Trp Gly Gln Gly Thr
            100                 105                 110

Leu Val Thr Val Ser Ser
        115
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